



State of Wisconsin: Mainframe Java Brings Customer Service into the 21st Century

An IDC e-business Case Study

THE RESULTS

"The new self-service application enables our customers to access the information they need from the Web—without assistance from administrative staff. This greatly speeds the information-sharing process and saves valuable staff time."

THE GOAL

NEAR-TERM:	Provide the state with a more efficient means of accessing employee benefit information.
LONG-TERM:	Improve efficiency and timeliness of information while increasing customer satisfaction.

THE ORGANIZATION

VITALS:	The Department of Employee Trust Funds (ETF) administers benefits for most of Wisconsin's half a million public employees, including the Wisconsin Retirement System and many insurance programs.
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THE SOLUTION

PROFILE:	Web-based Customer Self-Service Solution
DEPLOYMENT TIME:	Approximately 90 days
IMPLEMENTATION TEAM:	Wisconsin Dept. of Administration (Info-Tech Services Div.), ETF, and IBM's e-business Center.



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Since 1998, the State of Wisconsin has embraced Java-based technology as a means of improving key customer service processes within select departments. One of the most significant initiatives was sponsored by the Department of Employee Trust Funds (ETF), which provides public governmental entities (such as state agencies) with information about employee benefits. Each year, the ETF fields thousands of phone calls from these entities requesting account status or enrollment information, and thousands more inquiries by fax and US mail. Growing demand for information led the ETF to seek a technology-based means of information access to keep pace without hiring new staff.

To provide Web-based access to its back-end databases, the State of Wisconsin chose IBM technology to build a customer self-service application for the ETF, allowing the state to almost completely leverage its sizable investments in infrastructure and applications. Built in three months, the solution is powered by the IBM S/390, WebSphere Application Server, DB2 Universal Database and CICS. The solution relies heavily on Java technology, employing servlets and Java Server Pages (JSP) extensively.

The Solution

Software

- IBM WebSphere Application Server
- IBM VisualAge for Java
- IBM DB2 Universal Database
- IBM CICS

Hardware

- IBM S/390 Parallel Enterprise Server

Services

- IBM e-business Center

The Benefits

- Increased customer satisfaction
- Faster information access
- Increased timeliness of data
- Increased efficiency and lower administrative costs

The solution vastly improved the efficiency with which the ETF delivers benefit information to its key audiences: public employers and companies that do business with the State of Wisconsin. By increasing the speed of the information-sharing process, the ETF has saved valuable staff time, thus allowing the ETF to allocate staff resources to other areas. Customer satisfaction has increased noticeably, with 90% of customers now interested in getting all their data through the Web.

Going forward, the ETF's near-term goal is to develop additional Web self-service applications to aid internal staff in supporting benefits counselors in the field. The State of Wisconsin's broader technology goal is to move quickly in adopting Enterprise Java Beans technology to rapidly develop a new generation of Web-based applications that integrate a variety of technology environments.

► Operating Environment: Wisconsin Department of Employee Trust Funds (ETF)

e-business Challenge State of Wisconsin ETF

"Our main challenge was to ensure that the state embraced the best technological alternative available given our then-current situation. We wanted to make certain that whatever we did was better and faster and cheaper than what we were doing at the time."

—Bill O'Donnell, Wisconsin
Department of Administration

The State of Wisconsin Department of Employee Trust Funds (ETF) administers the retirement and insurance packages for the majority of Wisconsin's public employees. All told, ETF's benefit programs cover 1,230 Wisconsin public entities—working in Wisconsin state departments, school districts, police and fire departments, and other agencies—and nearly half a million of their employees. One key function of the ETF is to provide these public employers with information about employee benefits.

In the course of a typical year, the ETF's staff of 180 employees fields approximately 10,000 phone calls from employers requesting account status or enrollment information, as well as thousands of additional inquiries by fax and US mail. [In order to enroll a staff member in the Wisconsin Retirement System or provide insurance benefits, an employer needs to determine the employee's eligibility and coverage requirements to ensure employees are enrolled in the correct programs and receive the benefits to which they are entitled.] The fact that the ETF's benefits information resides on the State of Wisconsin's mainframe-based systems has until now necessitated the involvement of a service representative to query the mainframe and deliver the information to the requesting party.

The increasing demand for information from the ETF's client base proved to be a critical catalyst in its e-business evolution. Specifically, the ETF needed to respond to a resource squeeze brought on by a growing client population—that demanded more and more information—and the fact that its capacity to address queries via its traditional methods was essentially fixed (since the hiring of additional staff requires legislative approval). This resource crunch soon led the ETF to seek a technology-based means of information access to keep pace with its clients' growing appetite for information, while making more efficient use of ETF's staff resources.

► e-business Challenge

According to Bill O'Donnell, a consultant in Wisconsin's Department of Administration—which provides the IT services for ETF and other agencies—the move toward a Web-based solution was not a question of "if," but "how." "Our main challenge was to ensure that the state embraced the best technological alternative available given our then-current situation," says O'Donnell. "We wanted to make certain that whatever we did was better and faster and cheaper than what we were doing at the time."

► First Steps

According to O'Donnell, the ETF's technology initiative drew heavily from the lessons learned from an unrelated IT project in which he was also closely involved. In early 1998, Wisconsin had encountered availability problems with its unclaimed property application which—after garnering national publicity in the wake of a television newsmagazine story—had experienced periods of extreme demand on the system. In O'Donnell's view, he was faced with two choices: to upgrade the UNIX server that had previously run the unclaimed property application, or to port the application, using Java, to an IBM S/390 G5 server running in the state's data center on an "experimental" basis. "It seemed a low-risk proposition, since the hardware was already in place," notes O'Donnell. "But there were still some loud voices from players seeking to fan doubts about the S/390's ability to meet the demands of being a Web server. We thought using the S/390 was worth trying, and our bet paid off."

Key Decision Criteria In Selecting an IBM e-business Solution

"From a performance standpoint, the S/390 had already proven that it was ready for 'prime time' as a Web server. The other extremely important factor we had to consider was security, given the extremely confidential nature of the back-end data. Our belief that the S/390's fundamental architecture enables extremely tight security clearly fueled our enthusiasm for it as a core component of our solution."

—Bill O'Donnell, Wisconsin
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The success of the venture was clear from the start, notes O'Donnell. "The performance problems [for the unclaimed property application] went away immediately," he says. "This not only confirmed what we already knew—that the S/390 was scalable—but also that it worked very well as a Web server. In fact, using the S/390 to access back-end data in DB2 databases has given us 'green screen' speeds through a browser. I believe the success of that first application proved to be a watershed in our decision to broaden the use of the S/390 and Java for Web-based application development."

► Decision Criteria and Process

While Wisconsin's choice of the S/390 was in some measure a reflection of its desire to leverage existing infrastructure and applications (including DB2 and CICS), its decision was also underpinned by a host of well-defined criteria, such as security, availability, and scalability. "From a performance standpoint, the S/390 had already proven that it was ready for 'prime time' as a Web server" says O'Donnell. "The other extremely important factor we had to consider was security, given the extremely confidential nature of the back-end data. Our belief that the S/390's fundamental architecture enables extremely tight security clearly fueled our enthusiasm for it as a core component of our solution."

O'Donnell also points to the superior performance of DB2 and CICS on the S/390 as a critical factor in the state's strategy of leveraging the existing IT infrastructure. "DB2 and CICS have been the backbone of the ETF system for a long time, and during that time have provided the state with unparalleled

performance,” says O’Donnell. “Running on the S/390, DB2 gives us the combination of high performance and tight security that is crucial for an application like the ETF solution.”

In developing an application architecture strategy, O’Donnell and his team employed a forward-thinking approach that stressed flexibility and efficiency. “Given the extreme dynamism of the Internet, we were committed to working within a standards-based environment,” says O’Donnell. “The advanced state of standards development in the Java space clearly sent us down the road to a Java-based solution.” That road also led to Wisconsin’s choice of WebSphere Application Server (WAS) to power the solution.

While O’Donnell cites the S/390’s support for WAS as an important factor, he is quick to point to other critical features that influenced Wisconsin’s application server decision process. “WebSphere’s portability—the fact that it runs on all the other platforms—was a major factor in our choice,” says O’Donnell. O’Donnell also cites WebSphere’s ability to support servlets and Java Server Pages (JSP) technology as a key factor in the selection of WAS. “We see servlets and JSP as one of the most powerful elements of the Java framework, since from an application development standpoint they enable the separation of presentation logic, business logic and data logic,” he adds. “We have already experienced major efficiencies in our development process, resulting in lower costs and a shorter development cycle.”

Solution Profile and Implementation Strategy

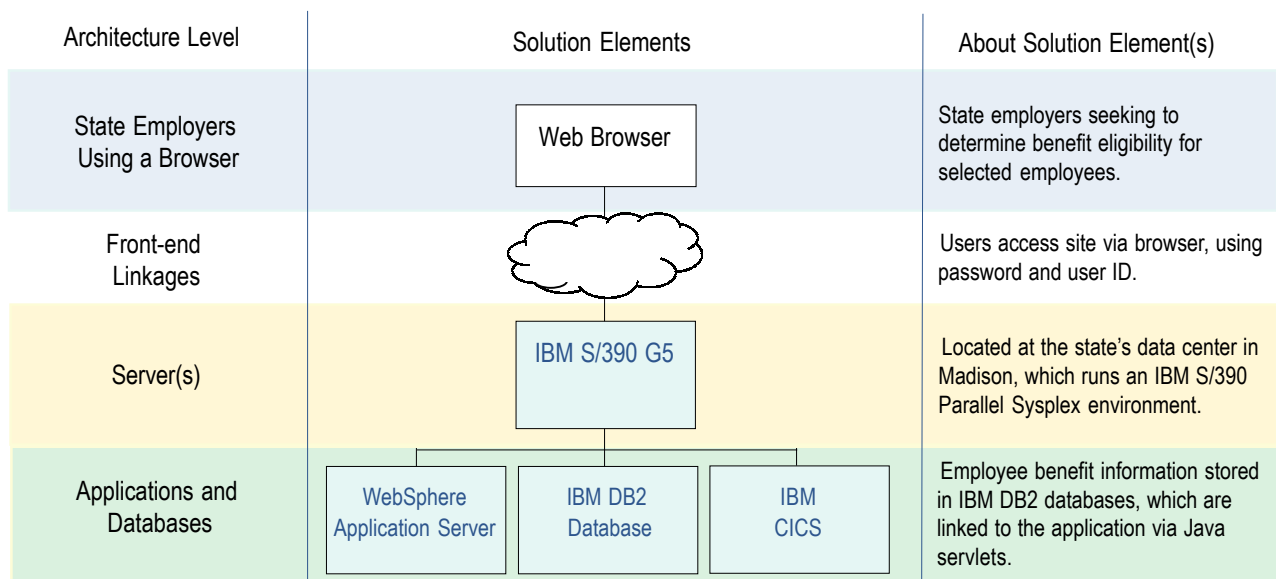
► The State of Wisconsin ETF Solution

While the State of Wisconsin has rolled out more than a dozen Java-based applications, the ETF solution (profiled here) is the most significant thus far. The ETF solution is a Web-based self-service application that allows state employers (and select business partners) to determine benefit eligibility for selected employees. There are presently approximately 2,000 users, although that number is likely to mushroom once the application incorporates user authentication features. Users seeking information access a secure site after entering a user ID and password. The first content the user sees is an inquiry Web page, behind which is a Java servlet that governs access to a DB2 database containing the employees' information. After the user inputs the employee's Social Security Number, WAS issues a request to the servlet to secure the employees's information from the database and presents it in HTML format in the employer's browser. The ETF application runs on an IBM S/390 G5 server (located in the State of Wisconsin's data center in its Department of Administration) which runs WAS, as well as IBM DB2 Universal Database and IBM CICS.

► Implementation Approach and Timetable

Sponsored by the Wisconsin Employee Trust Fund Department, the solution was initially introduced as a pilot program involving the Info-Tech Services Division of the state's Department of Administration and IBM's e-business

Figure 1:
Basic Architecture of the ETF Solution



Source: State of Wisconsin and IDC



Center. The pilot development effort—involving three developers and several support personnel and lasting approximately three months—ran from September to December, 1998.

The development process unfolded in three distinct phases:

- coding the application
- preparation of the S/390 environment, and
- porting the application to the S/390 environment; testing; and evaluation

In the first phase (September 1998), personnel from IBM's e-business Center in St. Louis worked with the ETF and Info-Tech Services to code the application. Using VisualAge for Java Enterprise Edition and WebSphere for S/390, the IBM team created servlets, server-side Java applications that provide interactive access to benefits data stored in a DB2 database on the S/390 system via a browser. IBM also worked with ETF to refine the application's interface, as well as to establish a working prototype running on Windows NT on a LAN before introducing it to the S/390.

Under the second phase of the development process (also begun in September 1998, and running concurrently with the first phase), the Info-Tech Services team prepared the S/390 architecture at the state's data center in Madison, Wisconsin (which runs an IBM S/390 Parallel Sysplex environment). This preparation phase, in which the state's team also installed critical solution elements such as WAS and DB2, essentially laid the groundwork for the team to port the prototype application to the S/390—the final phase of the implementation (completed in December 1998).

O'Donnell points to the ease with which the application was migrated to the S/390 as the most compelling evidence of Java's strength as a multi-platform application development tool. "We took the Java application developed by IBM and ported it to the S/390 with virtually no code changes," said O'Donnell. "I couldn't imagine a better way to demonstrate the portability and the sheer power of Java. I think Java is the most powerful way of delivering e-business solutions to the Net, especially on the S/390." After completing the pilot in January 1999, the ETF subjected the application to a barrage of tests and conducted meetings with end users to showcase the application's capabilities. The ETF application went into production in January 1999.

**Figure 2:
Implementation Timetable for the ETF Solution**

	Spring 1998	September 1998	November 1998	December 1998	January 1999
Initial use of S/390 for unclaimed property application	■				
Beginning of the development process for the ETF application.		■			
Preparation of the S/390 environment for the solution.		■			
Porting of application to the S/390 environment			■		
Development completed; system testing and evaluation among end users.				■	
ETF application goes into production.					■

Source: State of Wisconsin and IDC

Business Results

► Business Results Overview

In deploying a Web-based self-service platform, the ETF vastly improves the efficiency with which it delivers benefit information to its key audiences: public employers and companies that do business with the State of Wisconsin, notes Jon Forde, Application Development Director for the ETF. "Our customers depend on us to rapidly develop and deploy applications that will help improve the efficiency of their agencies—and improve state services for Wisconsin residents," says Forde. "The ETF self-service application really helps us deliver on that mandate."

► Targeted Metrics and ROI Achieved

Prior to the deployment of the solution, the ETF's representatives would field benefit and employee information requests from employers via telephone. ETF representatives would then query the mainframe database using a complex series of online forms. If the representative found the information, it would be relayed to the requesting employer in the course of the call. If not, the representative would be forced to call back or send the information via fax or mail to the requesting party. "The new self-service application enables our customers to access the information they need from the Web—without assistance from administrative staff," says Forde. "This greatly speeds the information-

**Figure 3:
Overview of the ETF's Business Results Achieved**

Business Process Area	Nature of Benefit	Description or Metric
Administrative	Cost reduction/avoidance	Improved utilization of internal administrative staff.
Customer Service	Improved quality	Faster delivery of information to ETF "customers."
Customer Service	Higher satisfaction	90% of users want the Web-based solution expanded.
Application Development	Faster time to deployment	WAS enabled aggressive 90-day development cycle.

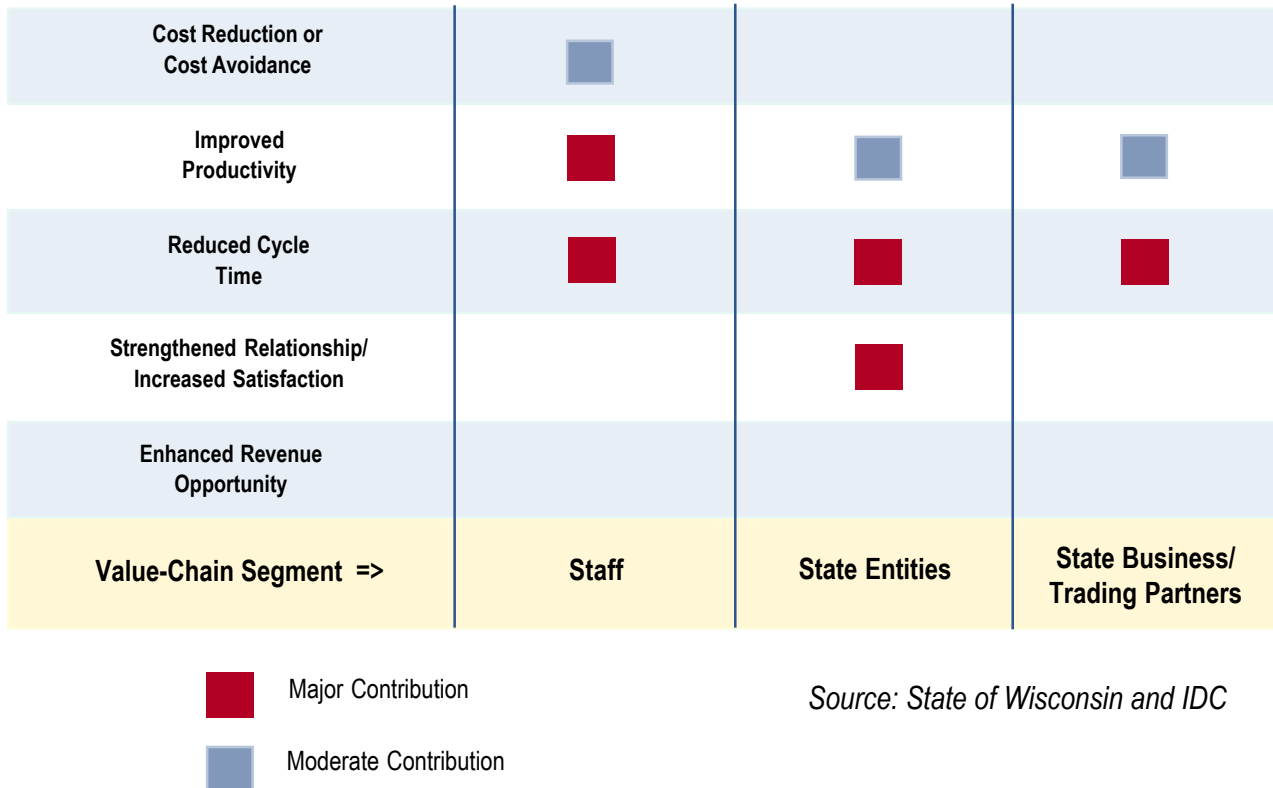
Source: State of Wisconsin and IDC

sharing process and saves valuable staff time."

Dave Hinrichs, Executive Sponsor of Wisconsin's Employee Trust Funds, agrees. "You have to go through a pretty complicated navigation to provide information to employers by phone," says Hinrichs. "Now our staff will be able to get to the data quicker by using the application themselves as customers—and that's going to cut their time to answer phone calls. When that piece goes away and employers go right to the Web-based system, then we're out of the loop and available to work on other things. This opens the door for us to alleviate backlogs in other areas."

In addition to yielding major operational efficiencies, the ETF solution has also been a major hit with users. "We've surveyed our customers on the Web application and the findings couldn't be much more positive," says Forde. "The state employers—who are our customers—said that they like it, and that they wanted more of it. In fact, almost 90 percent said that they wanted access to all the data via the Internet."

**Figure 4:
Expected Contribution to ETF ROI by Value Chain Segment**



Looking back on the ETF self-service initiative, Sari King, CIO of Info-Tech Services, points to a wide range of benefits associated with the use IBM technology. As she explains, one of the biggest advantages to leveraging the existing S/390 infrastructure was the ability to avoid costly investments in a new server infrastructure. "By keeping our costs for the initiative low, we stand to harvest much higher returns."

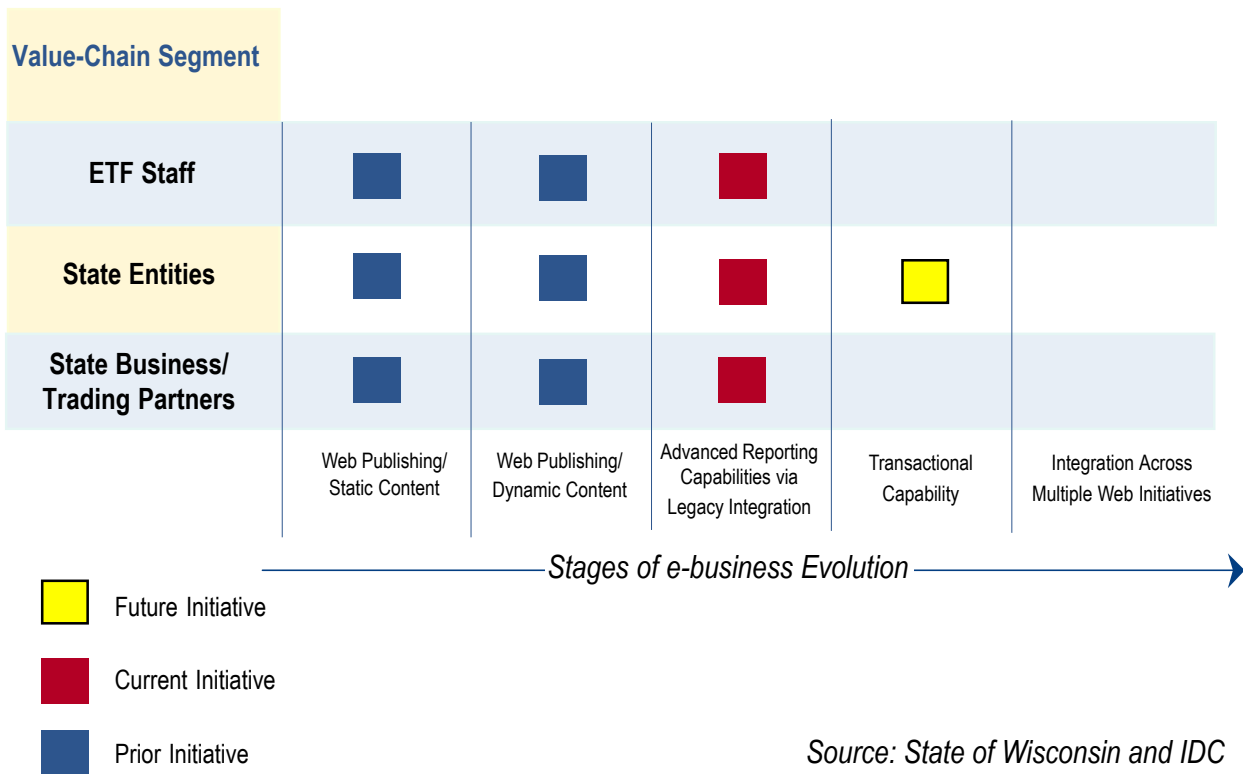
On the software side, WAS yielded its greatest benefits in the flexibility it provided to application developers. This included the ability to create and test a Java-based Web application on one platform (i.e., Windows NT), and then port it to another (S/390). "This provided the developers the flexibility to write the source code in one location and run it in another, without changing the code," says O'Donnell. "WebSphere and Java enabled us to become an e-business in a very cost-effective and rapid fashion. In short: better, cheaper, faster."

According to ETF's Forde, this flexibility also translated into a significantly shorter development cycle. "Given the new technology used for this project, we have been pretty happy with the speed with which the development has occurred."

The ETF's near-term goal is to develop additional Web self-service applications to aid internal staff in supporting benefits counselors in the field. ETF is also researching ways to automate the enrollment process through a similar—yet more transactional—self-service application, allowing employers to enroll their staff in the Wisconsin Retirement System via a one-stop Web self-service site.

On the broader subject of technology focus, O'Donnell sees the State of Wisconsin moving aggressively to adopt Enterprise Java Beans (EJB) technology. "At present, there are many projects that are in various stages—from gathering business rules all the way to the design phase—and nearly all are banking on Enterprise Java Beans technology. The State of Wisconsin is accelerating its use of EJB to capitalize on the efficiency and versatility that it promises to add to our development effort. Our use of WebSphere Application Server puts us in a great position to do this."

**Figure 5:
State of Wisconsin ETF e-business Evolution and Value Chain Focus**



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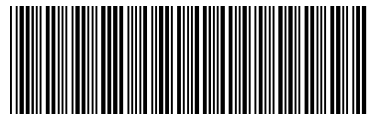
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